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Electronic Medical Records & Patient Privacy

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ABSTRACT

Over the last few decades, technology has taken over the world and almost everything has switched to computers. With the transition to Electronic Medical Records, not many people are aware of the severe effects and their privacy rights. The purpose of this study was to measure the awareness of specifically high school students on electronic medical records and patient privacy. This study conducted an experiment between Calabasas High School students and U.S. doctors to see how aware each student was about this issue as well as the doctors' thoughts on how aware the students are. All students (N=330) completed an online survey sent out to them via Google Classroom. Additionally, all doctors (N=100) also completed an online survey sent out to them via doctor pages. Student surveys collected reports of basic privacy issues, privacy rules, and electronic medical records. Doctor surveys mimicked the student surveys, but were adjusted accordingly. Results revealed that while many students were not aware of the effects of electronic medical records and issues with patient privacy, they were more aware of these issues than what doctors thought. Implications suggest that more students need to be educated on the effects of technology within the medical field and where their privacy rights stand.

Introduction

In today's society, there is a higher use and growing dependence on technology. Everything in one's life is technology based, and it is hard to imagine a life without the use of technological devices. Technology has also specifically changed the way medical records are stored as everything is now organized on the computer. The use of electronic medical records (EMRs) has impacted the medical world significantly. However, there are many concerns surrounding data privacy and confidentiality that limits the use of the EMRs (Shortliffe, 1999). EMRs can lead to the inappropriate use and release of patient information by any worker in the medical field. Although there are federal laws in place to protect patient privacy, there are still multiple privacy breaches due to third-party reimbursement schemes within the medical field (Barrows & Clayton, 1996). Most studies expect that 25% of people will be concerned with this issue and more than half of the people are willing to do something about this issue (Goodwin, et al, 2002). This is because most people put all their trust in their doctors and are generally not aware of the risks that come with storing their private information online, especially high school students. There is a gap in the academic research that does not address high school students and their awareness of this issue, most likely because high school students do not care about their privacy very much. High school students, specifically the ones at Calabasas High, will be used in this research process to test if they are aware of the issues concerning their privacy. With the ongoing research on this topic, it will eventually lead people to be more cautious about how their personal information is stored and who their information is being shared with. The research will also help guide stricter technological developments that help with security and privacy which prevent any further breaches to the system. This paper aims to address the issue of electronic medical records and patient privacy starting with the question: To what extent are high school students aware of electronic medical records and how it affects their patient privacy?

Literature Review

The Transition from Paper Records to Electronic Medical Records

Before today's society, doctor's notes and patient records were stored on paper files. However, due to technological influence on society, the medical field has implemented new types of electronic medical records to store patient information. These electronic medical records allow physicians and medical providers to store patient information on computers rather than on paper (Miller & Tucker, 2009). Studies have also shown that since the year EMRs have been implemented wide-scale, up to 90% of all doctors have switched to electronic medical records over traditional paper records, while only a small number of doctors have chosen to keep paper records (CDC, 2022). One of the main reasons for this switch is to have a primary place to hold and secure all patient records, which provides for better organization of each patient record. While transitioning to EMRs, the main issue facing physicians was the steps required to enter the notes. There were problems with data access, basic login information, and other measures, but after taking time to transition, almost all patient records are starting to be stored electronically (Payne, et al, 2010). The use of electronic medical records has impacted the medical field significantly as it has increased work productivity among all doctors. Doctors are now able to take more notes due to dictation and find more records due to search engines, all of which save time and allow doctors to see more patients throughout the day. The switch to EMRs has created more valuable and precise patient care.

Concerns About EMR Security

Electronic Medical Records have created many debates about the protection of patient privacy. Some say that EMRs are more secure than paper records as newer technology has allowed for better security than paper records (Barrows and Clayton, 1996). However, many others believe that with newer technology, EMRs are actually less secure than paper records as people can hack into computers and networks to get access to information, which puts patient records at risk (Ronquillo, et al, 2018). Most patients understand how the use of EMRs has allowed doctors to be more efficient in their work and performance. However, there are a handful of patients who are concerned with the security of their private information as technology allows files to be transported across platforms almost instantaneously in the network (Caine and Hanania, 2013). In a study done by researchers and professors, Dr. Kelly Caine and Rima Hanania, they explored how patients feel about the switch to EMRs and their rising concerns about the security of their private records. They found that most patients are willing to trust the EMRs as long as new steps are implemented so EMRs are designed to protect patient information (Caine and Hanania, 2013). In order to address these concerns and maintain the level of privacy afforded by medical records, medical officials have to pick new privacy controls over information contained in their electronic medical records to ensure patient security.

Patient Privacy Acts

In 1974, the United States Federal Law established an act that protects records of any individual that includes any personal identifying information, which was known as the Privacy Act of 1974 (HHS, 2022). In 2018, President Donald Trump announced a new movement known as MyHealthEData which allowed patients greater access to their personal EMR. This movement was built to help patients receive care and share their information with other providers to improve their health. However, this new initiative has created bigger security problems as it opens a wider array of people that patient EMRs are exposed to (CMS, 2018). A new privacy regulation known as the Health Insurance Portability and Accountability Act (HIPAA) came into effect in 2003. The HIPAA law is a federal law that protects a patient's personal information and prevents their information from

being disclosed without their consent (CDC, 2022). This law has impacted not only patients but doctors as well. Doctors need to give their patients a privacy notice that informs them of their privacy rights and who will have access to their records (Annas, 2003). Although strictly implemented, there have been many instances where HIPAA has been breached. For instance, in a study conducted by Dr. Annette A. Cannon and Dr. Holly Caldwell, they reviewed a case study that involves a nurse violating the HIPAA Act. This case study showed that a nursing student was instructed to present a case on a patient, and the nurse was under strict rules not to share the information with anyone because of consent and liability issues. However, the nursing student indirectly shared this patient information with an informal discussion group and thus violated the terms of HIPAA (Cannon and Caldwell, 2016). When it comes to electronic medical records, patient rights along with privacy must be protected.

How Electronic Medical Records Connect Doctors Across the Country

The implementation of technology for the use of electronic medical records has actually connected doctors across the country. Under the HIPAA Act, sharing data electronically with patients' third-party apps is legally consistent, and data is legally allowed to be shared with other doctors (Savage and Savage, 2020). There have also been instances where doctors are able to treat their patients from a distance, due to the singular database, known as the cloud, where all medical information is stored. Due to this, although unethical, doctors from New York are legally able to access a patient's record who lives in California (Zala, et al, 2022). Although most patients are unaware of this accessibility, the spread of this information leads to more concerns about patient privacy. EMRs allow medical providers to store and exchange patient information using computers rather than paper records from all over the world with one database. However, facilities are more likely to adopt these EMRs if they are able to reassure patients that their confidentiality is protected (Miller and Tucker, 2009). With the strong influence of technology in this day in age, the strongest solution to fixing security issues is to create strong systems that can protect private information.

Gap

One of the main gaps in this research was that current studies were done with adults and medical providers. Adults are more likely to be aware of ongoing privacy issues and their rights on these privacy issues. However, there is a need for a study that focuses on the awareness of high school students. New understandings of high school students are needed to contradict the ideas from results of studies on adults and to confirm a hypothesis that high school students are not aware of privacy acts and privacy issues containing their personal information. This missing piece fills in a gap and questions how education on this topic can be implemented more clearly for students. This study is most closely aligned with the research of Laura Goodwin, Karen Courtney, David Kirby, Mary Anne Iannacchione, and Tina Manley (2002) in observing the perception of patients on their information privacy. The difference however is this study focuses on testing the awareness of high school students on patient privacy rather than the awareness of adults on patient privacy. Another difference in the research is seeing how aware medical providers feel high school students are on patient privacy. Going off of previous researchers' results, it is hypothesized that many high school students will not be aware of patient privacy and medical providers will feel the same.

Methods

The goal of this research is to find the awareness of high school students on patient privacy and electronic medical records. This study most closely aligns with Goodwin, Courtney, Kirby, Iannacchione, and Manley's

(2002) pilot study, which distributed a voluntary questionnaire to evaluate patients' perceptions on the privacy of electronic medical records. The foundational work of Lemonidou, Merkouris, Leino-Kilpi, Valmiki, Dassen, Gasull, Scott, Tafas, and Arndt (2003) also played a large role in gaining the perception of patients on their privacy of medical records through a medical professional's perspective. Survey questions were extracted from these sources and fixed for the population in question. These observational studies created a base to analyze the awareness of high school students on patient privacy and electronic medical records from both a student's perspective and a doctor's perspective.

Before beginning the study, three hypotheses were developed. The first hypothesis expected to find that not many high schoolers would be aware of their privacy rights and would be unaware of the risks of EMRs. The next hypothesis predicts that doctors would agree with this statement in saying that high schoolers are generally unaware of the effects of electronic medical records. The last hypothesis comes to an expected consensus in saying that most high schoolers would not particularly care about how safe their medical records are and would not care to do anything about it once brought to their attention.

Most participants consisted of students from a large co-ed high school, from Calabasas High School, with over 2000 students. The school has an academically rigorous curriculum and a high graduation rate. The school is ethnically diverse and allows for a variety of representation in this study with 2% South Asian, 2.5% East/Southeast Asian, 2.5% Black/African-American/ African/Afro-Latino, 5.3% Hispanic/Latinx, 13.5% Northeastern, and 74.2% White/Caucasian. About 330 participants, ranging from grades 9-12, were sampled in this study: 51.1% of the participants were male and 46.5% were female. Surveys were sent out for over a week and a half's worth of time and were sent to all English classes offered at the high school because all students are required to take an English class.

English teachers were sent the survey and were asked to distribute it amongst all classes via Google Classroom. Additionally, the researcher went into each English class to provide a brief overview of the ongoing project in order to inform the high schoolers in person what the survey is about. This way, most students would be more likely to take the survey since it was explained in detail rather than just seeing a link online. However, due to the overall nature of the study, some responses were not applicable.

The other sample of data was from multiple different doctors from across the country. Surveys were sent out to UCLA Health offices and doctors across the country who chose to fill out the survey. Different from the surveys sent to the high schoolers, doctors were asked to send the survey to any family or friends who were doctors as well. About 100 data responses were collected, which does not completely represent the entire population of doctors in the United States. The data might also be slightly biased due to a voluntary response bias from doctors who chose to take the time to do the survey.

Participants from the high school were asked to fill out an 11-question survey with demographic information, and participants from doctor's offices were asked to fill out a survey tailored more towards the doctors. Employing a Likert Scale methodology, the majority of the questions were rated on a one to five scale, with one representing strongly disagree, and five representing strongly agree. Most questions were inspired by the ones from Goodwin's study and a few self-defined questions were added. The doctors' survey asked most of the same questions as the students' survey except that their questions started with "high school students think" to test their perception on how aware they think students of EMRs and their privacy rights.

Table 1. Student Survey

Questions	Measurement Scale	Source
Demographics	Assorted	
Age	14, 15, 16, 17, 18	Self-Identified

What Year Will You Graduate High School?	2023, 2024, 2025, 2026	Self-Identified
Gender Identity	Female, Male, Non-Binary, Prefer not to say	Self-Identified
Please select the ethnicity/ethnicities you identify with.	Black/African-American/African/Afro-Latino, Central Asian, East/Southeast Asian, Hispanic/Latinx, Middle Eastern (Southwest Asian/North African), Native American/Indigenous, Pacific Islander/Polynesian, South Asian (including the Indian sub-continent), White/Caucasian, Prefer not to say	Self-Identified
Answer each question honestly and to the best of your ability.	Assorted	
To your knowledge what is the HIPAA Act?	Short Answer	Self-Identified
What type of information/demographics do you believe you give to your doctor? (Select all that Apply)	Date of birth, Address, Insurance, Phone Number, Social Security Number, Previous Injuries, List of Diseases, List of Allergies	Self-Identified
Who do you think has access to your private medical records?	The Patient (me), My doctor, The clinic or hospital, The practice, A medical database	Self-Identified
Your patient information is secured at your doctor's office	Likert Scale: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (5), Strongly Agree (6)	Goodwin et al.
You are able to get a copy and take home your medical record	Likert Scale: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (5), Strongly Agree (6)	Goodwin et al.
Your doctor is able to get a copy and take home your medical record	Likert Scale: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (5), Strongly Agree (6)	Goodwin et al.
Another doctor other than your own is able to get a copy and take home	Likert Scale: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (5),	Goodwin et al.

your medical record	Strongly Agree (6)	
You have read and understand your doctor's office's confidentiality information	Likert Scale: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (5), Strongly Agree (6)	Goodwin et al.
How much do you TRUST that your personal information remains private?	Likert Scale: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (5), Strongly Agree (6)	Goodwin et al.
How much do you CARE that your personal information remains private?	Likert Scale: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (5), Strongly Agree (6)	Goodwin et al.
Have you experienced any problems in the past with privacy or your personal information?	Yes, No, Decline to State	Self-Identified

Table 2. Doctor Survey

Questions	Measurement Scale	Source
Select all that apply: "High school students think _____ has access to their private medical records."	The Patient, The Doctor, The Clinic or Hospital, The Practice, A Medical Database	Self-Identified
High school students believe patient information is secured at your doctor's office	Likert Scale: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (5), Strongly Agree (6)	Goodwin et al.
High school students believe they are able to get a copy and take home their medical record	Likert Scale: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (5), Strongly Agree (6)	Goodwin et al.
High school students believe their doctor is able to get a copy and take home their medical record	Likert Scale: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (5), Strongly Agree (6)	Goodwin et al.
High school students believe that another doctor other than their own is able to get a copy and take home their medical record	Likert Scale: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (5), Strongly Agree (6)	Goodwin et al.
High school students read and understand your doctor's office's confidentiality information	Likert Scale: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (5), Strongly Agree (6)	Goodwin et al.

High school students TRUST that their personal information remains private	Likert Scale: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (5), Strongly Agree (6)	Goodwin et al.
High school students CARE that their personal information remains private	Likert Scale: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (5), Strongly Agree (6)	Goodwin et al.
In my professional experience, high school students have expressed concern about the privacy of their data	Likert Scale: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (5), Strongly Agree (6)	Self-Identified

Findings and Analysis

Different methods were used to analyze the data collected. By utilizing and adopting the work of Laura Goodwin and her team of researchers, she analyzed bar graphs and tested the correlation of each question to come to an overall conclusion (Goodwin, et al 2002). As for investigating the data retrieved from this research study, a t-test for dependent means was used to test if there was a significant correlation between the responses of students and patients. In total, there were 320 student responses and 101 doctor responses. The graphs below represent the responses of students and doctors.

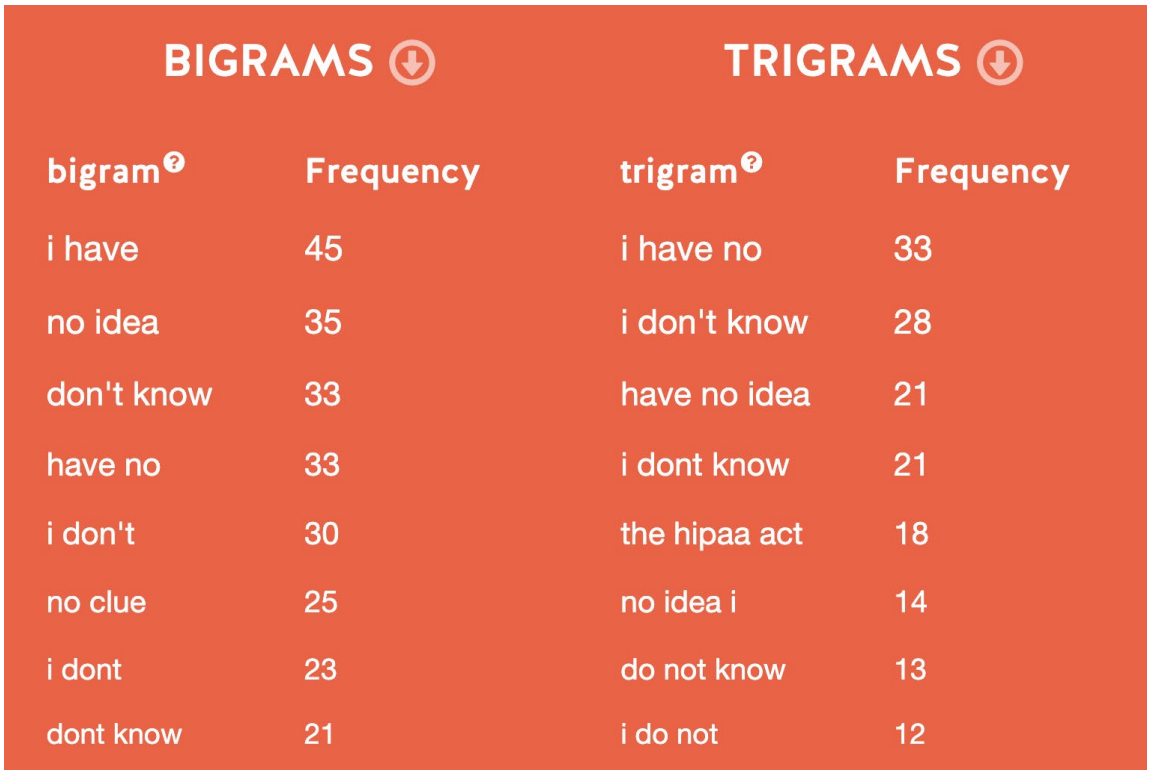

Figure 1. Word Cloud of Knowledge of the HIPAA Act

As shown in this word cloud, the students were asked to define the HIPAA Act in their own words and to the best of their ability. Overall, the top words from all student responses include "I have no", "I don't know", "have no idea", etc. This shows that most students who took the survey are generally not aware of what the HIPAA Act is. This also means that most students are unaware of their privacy rights and the risks electronic medical records bring.

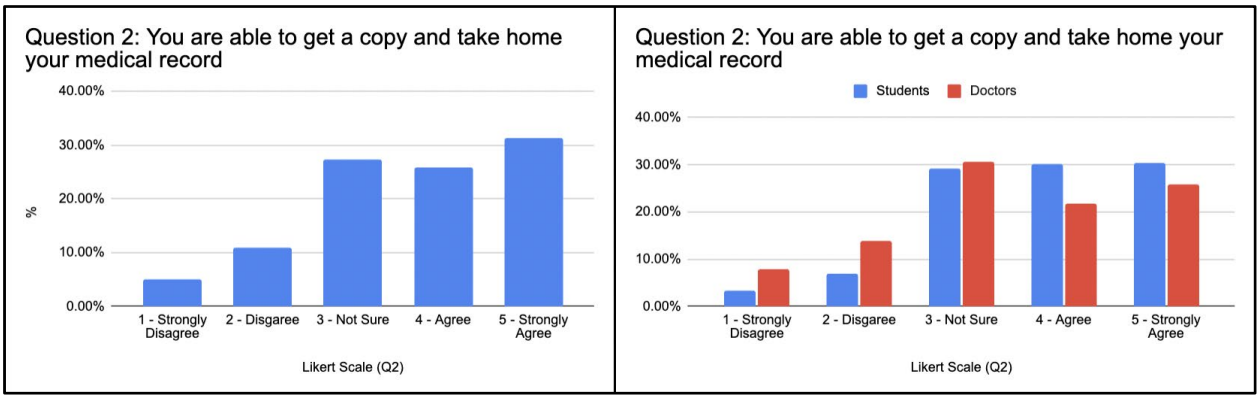

Figure 2. Descriptive statistical findings from Likert Scale questions. Graphs on the left show combined responses of students and doctors together. Graphs on the right show combined responses of students and doctors separately. Blue bars represent student responses and Red bars represent doctor responses.

To further understand the correlation between doctors and students, question 2 in figure 2 states "You are able to get a copy and take home your medical record" in which all respondents were required to answer the Likert Scale question. The Likert Scale used in this study used a 1-5 scale, with 1 being strongly disagree, 2 being disagree, 3 being not sure, 4 being agree, and 5 being strongly agree. Both charts show results that are skewed left in which the left represents strongly disagree and the right represents strongly agree. For this question, about 15.8% of combined responses said they disagree or strongly disagree, about 56.93% of combined responses said that they agree or strongly agree, and about 27.2% of combined responses were not sure about this statement. However, the separated responses broken down by student and doctor responses show that about 10.4% of students say they disagree or strongly disagree with this statement and 60.5% of students say that they agree or strongly agree with this statement. Doctor responses show that about 21.8% of doctors say they disagree or strongly disagree with this statement and 47.5% of doctors say that they agree or strongly agree with this statement. This reveals that the majority of students feel more confident that they are able to take home their medical records, whereas doctors do not feel as strongly that students think they have this ability.

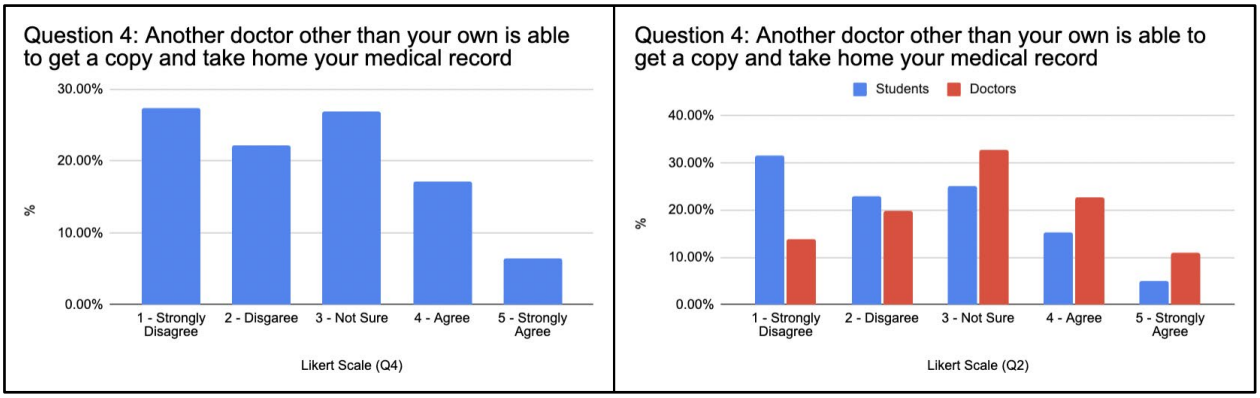

Figure 3. Descriptive statistical findings from Likert Scale questions. Graphs on the left show combined responses of students and doctors together. Graphs on the right show combined responses of students and doctors separately. Blue bars represent student responses and Red bars represent doctor responses.

This next question shows the correlation between students and doctors on the statement that "another doctor other than your own is able to get a copy and take home your medical record" in which the respondents also answered with the Likert Scale. The combined responses show a slightly skewed right pattern. On the right, the student responses are skewed right and the doctor's responses are roughly symmetrical. Combined results show that about 46.5% of students and doctors either disagree or strongly disagree, 24.8% of students and doctors agree or strongly agree, and about 28.7% are not sure about this statement. Additionally, the broken down results show that 54.5% of students disagree or strongly disagree with the statement and 20.4% of students agree or strongly agree with this statement. As for doctors, 33.7% of doctors disagree or strongly disagree with this statement and 33.7% of doctors say they agree or strongly agree with this statement. This demonstrates that most students disagree with the fact that other doctors can access their medical files, and doctors seem fairly neutral about how high schoolers might feel about this statement.

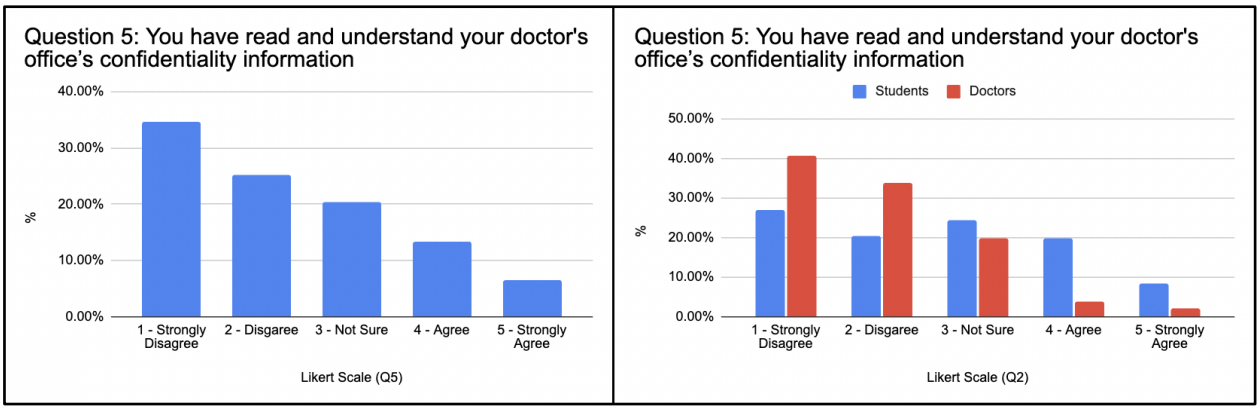

Figure 4. Descriptive statistical findings from Likert Scale questions. Graphs on the left show combined responses of students and doctors together. Graphs on the right show combined responses of students and doctors separately. Blue bars represent student responses and Red bars represent doctor responses.

As seen from question 5 in figure 4, respondents were required to answer the statement "You have read and understand your doctor's confidentiality information" by using Likert Scale. The data shows strongly skewed right results in both charts, which shows that both students and doctors feel that students have not read and understood their doctor's confidentiality forms. The combined responses show that 59.9% of students and doctors disagree or strongly disagree, 19.8% of students and doctors agree or strongly agree, and 20.3% of students and doctors are unsure about this statement. To break it down, 47.3% of students disagree or strongly disagree and 28.2% of students agree and disagree with this statement. The doctor responses showed that 74.3% of doctors disagree and strongly disagree with this statement and only 5.9% of doctors agree or strongly agree with this statement. The skewed right results for students show that the majority of students have not read and understood their doctor's confidentiality forms. Similarly, doctors strongly feel that the student has not read or understood their doctor's confidentiality forms; however, more students have read the privacy information than doctors think.

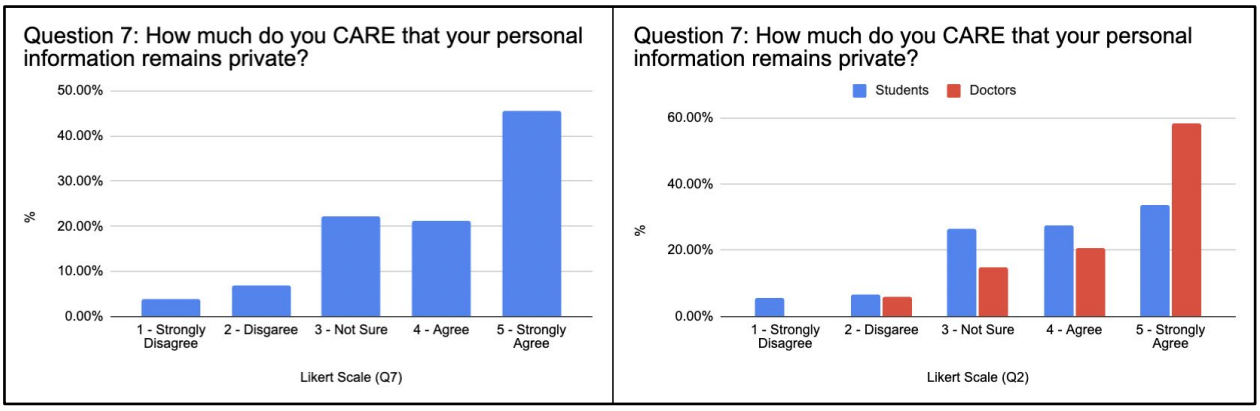

Figure 5. Descriptive statistical findings from Likert Scale questions. Graphs on the left show combined responses of students and doctors together. Graphs on the right show combined responses of students and doctors separately. Blue bars represent student responses and Red bars represent doctor responses.

For the last question, the charts represent the student and doctors' perceptions of the statement "How much do you CARE that your personal information remains private?" Both charts represent a strongly skewed left distribution and results show that about 66.8% of students and doctors agree or strongly agree with this statement, whereas only 10.9% of students and doctors disagree or strongly disagree and 22.3% are unsure of this statement. The broken down results show that 12.2% of students disagree or strongly disagree with this statement and 61.1% of students agree or strongly agree with this statement. Doctors, on the other hand, say that 5.9% of doctors only disagree with this statement and 79.2% of doctors agree and strongly agree with this statement. The results show that the majority of students do care that their personal information remains private, however, most doctors believed more strongly that students would care more than they actually did.

T Test Results: "You are able to get a copy and take home your personal medical record"		
T	-2.97	
P	0.00188	Results are significant at $p < 0.05$

Figure 6. T-Test for Dependent Means Results (Question 2)

To test for statistical significance between means, the researcher conducted a T-Test for dependent means. This statistical test was conducted using the *Social Science Calculators* and tests to see if there is a significant difference between two means, in this case a difference in average Likert Scale responses from doctors and student participants. After running a T-Test for dependent means between the doctor responses and student responses for each question, it was established that results between the responses were significant for the question of "You are able to get a copy and take home your personal medical record" because p is less than 0.05. The results from the student responses and the doctor responses indicate that results are statistically significant as the beliefs of both students and doctors vary in the idea that the student is able to get a copy and take home their medical record, $t(202) = -2.97$, $p = 0.00188$.

T Test Results: "Another doctor other than your own is able to get a copy and take home your personal medical record"

T	3.76	
P	0.00014	Results are significant at $p < 0.05$

Figure 7. T-Test for Dependent Means Results (Question 4)

This next significance test compares the student and doctor's responses for the question of "Another doctor other than [the student's] is able to get a copy and take home [their] personal medical records" and shows that results are statistically significant. Both students and doctors feel differently that another doctor other than the student's is able to get a copy and take home their personal medical record, $t(202) = 3.76$, $p = 0.00014$.

T Test Results: "You have read and understand your doctor's office's confidentiality information"		
T	-4.51	
P	0.00001	Results are significant at $p < 0.05$

Figure 8. T-Test for Dependent Means Results (Question 5)

The next question states that "[the student] has read and understands [their] doctor's office's confidentiality information" and shows that results are statistically significant. Both students and doctors have differing beliefs on the idea that the student has read and understood their doctor's confidentiality information, $t(202) = -4.51$, $p = 0.00001$.

T Test Results: "How much do you CARE that your personal information remains private?"		
T	4.28	
P	0.00002	Results are significant at $p < 0.05$

Figure 9. T-Test for Dependent Means Results (Question 7)

The last question analyzed states "How much do you CARE that your personal information remains private?" and tests to see if students and doctors believe that the student actually cares about whether their information remains private. The results were statistically significant and indicate that students and doctors have different opinions on if a student cares about their personal information remaining private, $t(202) = 4.28$, $p = 0.00002$.

Question	Doctor MEAN	Student MEAN	T Values	P Values
Q2	3.44	3.91	-2.97	0.00188*
Q4	2.97	2.297	3.76	.00014*
Q5	1.93	2.7	-4.51	.00001*
Q7	4.32	3.63	4.28	0.00002*

*indicates results are significant at $p < .05$

Figure 10. Summary of Findings: Means, P Values, and T Values

The summary description shows how the means significantly differ from each other and how each result is statistically significant. For question 2 ("You are able to get a copy and take home your personal medical record"), the student's mean is higher than the doctor's mean, which makes sense as a doctor feels that the student is less educated than they really are. For question 4 ("Another doctor other than your own is able to get a copy and take home your personal medical record"), the doctor's mean is higher than the student's mean, which also follows as doctors know that this is an action, however, the students are not as aware that this is the case. For question 5 ("You have read and understand your doctor's office's confidentiality information"), the student mean is higher than the doctor mean, which is surprising as doctors strongly disagree with the idea that students have read the confidentiality information when in reality a good amount of students have read it. For question 7 ("How much do you CARE that your personal information remains private?"), the doctor's mean is higher than the student's mean, which is also surprising considering one would expect it to be the opposite. Doctors believe that most students strongly care about how private their information is kept, whereas a student does not care all that much.

Returning to the research question: To what extent are high schoolers aware of electronic medical records and patient privacy? Parts of the original hypotheses are met, however, other parts are not. The results of this study show that most students are generally unaware of their privacy laws and confidentiality information as shown by the word cloud and the questions analyzed. This proves the first hypothesis, which states that most students are unaware of their privacy rights and EMRs. This study also shows that students care more about their privacy than initially expected, however, they care less about it than what doctors think. This refutes the third hypothesis which states that students wouldn't care how private their personal information is kept. This is similar to both of the foundational sources of Goodwin and Lemonidou's studies as both studies' results show that patients are generally unaware of their privacy laws, which is similar to this study since most students are not aware of privacy laws. Specifically, in Goodwin's study, results show that a percentage of patients she surveyed did not care much about how private their information remains, which is also similar to the results of this study. Overall, most results from this study support the results of other literature. However, conclusions made in this study show that there is not enough data to refute the literature. However, there is still room for more research on this subject.

Conclusion

To conclude, this study was conducted in order to test high school students' awareness of electronic medical records and their patient privacy at Calabasas High School. According to the data analyzed, most high school students are not aware of what the HIPAA Act is and doctors agree that most students are not aware of who owns their medical records. The findings also show that most students are generally unaware of their privacy laws and confidentiality information as seen in the word cloud. Students care more about their privacy than initially expected, however, they care less about them than what doctors initially thought. The results of this study are similar to both Goodwin and Lemonidou's studies as both results showed that patients are generally unaware of their privacy laws. Specifically, in Goodwin's study, results also showed that a percentage of patients did not care much about how private their information remains, which is similar to the findings of this study. Although this is true, the hypothesis was accomplished, it was proven in this study that Calabasas High School students are not aware of electronic medical records and their patient privacy.

Limitations that are seen in an area of this study are that there are more student responses than there are doctors' responses. Over 300 students submitted a response to the survey whereas only 100 doctors responded to the survey. This creates an unequal proportion of the respondents and the overall results. Therefore, the student respondents are more varied than the doctor respondents. Additionally, it was more difficult to

spread the word about the survey to doctors than it was for students. For students, there are more accessible resources that gave them more incentives to submit the survey. For doctors, they tend to be busier and there is no direct incentive for completing the survey. Some English teachers, specifically 9th grade teachers, provided their students with an incentive for taking the survey. For example, a teacher could offer extra credit or free points in the grade book for taking the survey. This produces a skew in the subpopulation as most of the student responses came from freshmen students, which may suggest that they are not as knowledgeable as senior students.

Implications are also seen in an area of study in which there needs to be more education on EMRs and patient privacy implemented in high schools. It is evident that many students are unaware of their privacy rights which indicates a need for stronger education in this area. Therefore, it is important to introduce more education on privacy rights and electronic medical records. There also needs to be more clarification regarding signed forms. Most students do not like to read the fine print. Although important, there is a need for more concise versions of these forms for the students to fully understand where their privacy rights stand and what they are signing. Additionally, there is a need for more awareness spread on this topic and on each of these privacy rights, either promoted in doctors' offices, or through social media to educate students. The next steps of research for this topic are to research consent forms as schools should be teaching students exactly what they need to look for when signing these forms. With these implementations and future research, it not only benefits students to be more educated, but it also benefits the doctors as there will be more trust within doctors' offices. The results indicate that there is a need for education in this area of study as most students are generally unaware of electronic medical records and patient privacy.

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